



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,741	06/22/2006	Tsutomu Sato	72277	1012

23872 7590 06/26/2007
MCGLEW & TUTTLE, PC
P.O. BOX 9227
SCARBOROUGH STATION
SCARBOROUGH, NY 10510-9227

EXAMINER

EOFF, ANCA

ART UNIT	PAPER NUMBER
----------	--------------

1753

MAIL DATE	DELIVERY MODE
-----------	---------------

06/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/596,741

Applicant(s)

SATO, TSUTOMU

Examiner

Anca Eoff

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/26/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/26/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Status

1. Claims 1-12 are pending in the application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear if claims 6 and 11 are claiming a "photofabrication method applied to the production of a printing plate, an electronic component and a precision equipment component" or a "photofabrication method applied to the production of a printing plate, an electronic component or a precision equipment component".

For examination purposes, claims 6 and 11 have been interpreted as claiming a "photofabrication method applied to the production of a printing plate, an electronic component or a precision equipment component".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraph of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1709

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Hidaka et al. (WO 00/29214).

With regard to claim 1, Hidaka et al. disclose a positive photosensitive printing plate composition comprising an alkali-soluble resin and a photo-thermal conversion material (page 8, lines 15-17).

The alkali-soluble resin can be a resin containing at least a novolak resin (polycondensation product of an aldehyde with a phenol) or a polyvinyl phenol resin (page 30, line 14-page 31, line 19).

The photo-thermal conversion material is a material absorbing light having a wavelength range from 600 nm to 1,300 nm and converting it into heat (page 8, line 30-page 9, line 2).

The composition can also include a solubility-suppressing agent (page 32, lines 9-13), equivalent to the dissolution inhibitor of the instant application.

The composition can also include a compound capable of crosslinking the alkali-soluble resin by effect of heat (thermocrosslinking compound) (page 36, lines 24-26). One of the preferred cross-linking compounds is Cymel 300 (page 37, line 20), which is a melamine-formaldehyde resin, as disclosed in par.0016 of Hu et al. (US Pg-Pub 2003/0100686).

Hidaka et al. specifically disclose a photosensitive composition comprising a m-cresol/p-cresol/phenol novolak resin, a photo-thermal conversion material, a solubility-suppressing agent and Cymel 300 melamine-formaldehyde resin (page 59).

Art Unit: 1709

With regard to claims 5-7, Hidaka et al. disclose a method of producing a photosensitive lithographic printing plate comprising the following steps:

- coating on an aluminum plate a composition comprising m-cresol/p-cresol/phenol novolak resin, a photo-thermal conversion material, a solubility-suppressing agent and Cymel 300 melamine-formaldehyde resin, to obtain a photosensitive lithographic printing plate precursor (page 59, lines 7-10);
- exposing by a semiconductor laser plotter at 830 nm (page 61, lines 11-14);
- developing with an alkali developer for positive lithographic plates (page 61, lines 14-15).

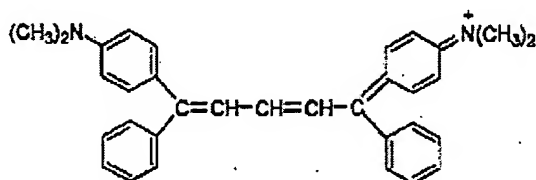
6. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuruya (JP 2002-189294).

With regard to claim 1, Tsuruya discloses a positive image forming composition comprising a photothermal converting material and an alkali-soluble resin which contains a novolak resin and/or phenolic resin (abstract). The composition can also contain a dissolution retardant (par.0054), equivalent to the dissolution inhibitor of the instant application and a crosslinking agent, such as Cymel 300 (par. 0055 and par. 0068), which is a melamine-formaldehyde resin, as disclosed in par.0016 of Hu et al. (US Pg-Pub 2003/0100686).

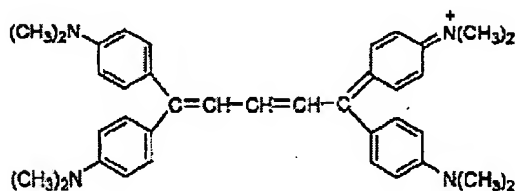
The photo-thermal converting material ("light-to-heat conversion material") is a compound that transform absorbed light into heat, said absorbed light having the wavelength preferably in the range of 800 to 1,100 nm (par.0011).

Art Unit: 1709

With regard to claim 4, Tsuruya further discloses that the photo-thermal converting material can be a compound of formula (I) or (II):



(I)



(II)

(compounds III-1 and III-3 in par.0036), with an anion portion X^- being p-toluene sulfonic acid ($p\text{-CH}_3\text{-C}_6\text{H}_4\text{SO}_3^-$) (par.0028).

The compound of formula (I) is equivalent to the compounds of formula (3) of the instant application, where R^7 and R^9 are $-\text{N}(\text{CH}_3)_2$ groups, R^8 and R^{10} are hydrogen atoms and Y^- is $p\text{-CH}_3\text{-C}_6\text{H}_4\text{SO}_3^-$.

The compound of formula (II) is equivalent to the compounds of formula (3) of the instant application, where R^7 , R^8 , R^9 , R^{10} are all $-\text{N}(\text{CH}_3)_2$ groups and Y^- is $p\text{-CH}_3\text{-C}_6\text{H}_4\text{SO}_3^-$.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1709

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parsons (US Patent 6,280,899) in view of Hidaka et al. (WO 00/29214).

With regard to claim 1, Parsons et al. disclose a heat-sensitive composition for lithographic printing plates comprising an aqueous developer soluble polymer, such as a phenolic resin, a compound that reduces the aqueous developer solubility of the polymer and an infrared absorber (abstract).

The aqueous developer soluble polymer, such as a phenolic resin (column 5, line 57) is equivalent to the alkali-soluble resin having phenolic groups of the instant application.

The compound that reduces the aqueous developer solubility of the polymer (reversible insolubiliser compounds in column 6, lines 14-15) is equivalent to the dissolution inhibitor of the instant application.

The infrared absorber can be an organic pigment or dyes such as a phthalocyanine pigment, a dye or a pigment of squarylium, merocyanine, cyanine, indolizine, pyrilium (column 9, lines 23-28). These compounds act as photo-thermal conversion material, as disclosed by Hidaka et al (WO 00/29214, page 28, lines 14-19).

Parsons et al. do not disclose the presence of a resin selected of the group consisting of vinylpyrrolidone/vinyl acetate copolymer, vinylpyrrolidone/dimethyl-aminoethyl methacrylate copolymer, vinylpyrrolidone/vinyl caprolactam/dimethyl-aminoethyl methacrylate copolymer, polyvinyl acetate, polyvinyl butyral, polyvinyl

Art Unit: 1709

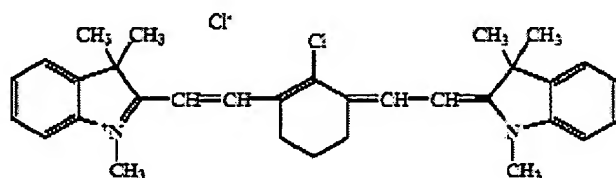
formal, styrene/maleic acid copolymer, terpene phenol resin, alkylphenol resin, melamine/formaldehyde resin and ketone resin as required by the instant application.

Hidaka et al. disclose a photosensitive composition comprising an alkali soluble resin and a photo-thermal conversion material (page 8, lines 5-17) a solubility-suppressing agent (page 32, lines 9-13) and a thermocrosslinking compound (page 36, lines 24-36), such as Cymel 300 (page 37, line 20), which is a melamine-formaldehyde resin, as disclosed in par.0016 of Hu et al. (US Pg-Pub 2003/0100686).

When the thermocrosslinking compound is contained in the photosensitive material, the alkali-soluble resin undergoes crosslinking, whereby the chemical resistance and the printing resistance can be improved (page 36, lines 26-29).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to include the thermocrosslinkers of Hidaka et al. in the heat-sensitive composition of Parsons et al., in order to improve chemical resistance and the printing resistance of lithographic printing plate (Hidaka et al., column 29, lines 22-26).

With regard to claim 3, Parsons et al. further disclose that the infrared absorbing material is a compound having the formula (III):



(III) (column 9, line 55).

Art Unit: 1709

The compound of formula (III) is equivalent to the compound of formula (2) of the instant application, when R^1 , R^2 , R^4 , R^5 are hydrogen atoms, R^3 and R^6 are $-CH_3$ groups and X^- is a halogen atom, specifically Cl^- .

With regard to claims 5-7, Parsons et al. disclose a method of making printing plates comprising the following steps:

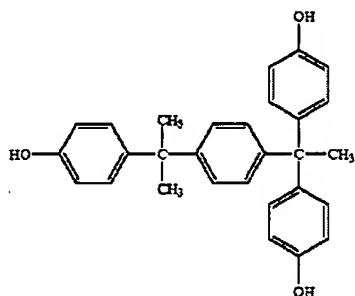
- applying the coating composition on a substrate by means of a wire-wound bar (column 12, line 44-46) ;
- drying at $100^\circ C$ for 3 minutes (column 12, lines 47-48);
- exposing the plate using a 830 nm laser device (column 13, lines 38-40);
- immersing in an aqueous developer solution (column 13, lines 40-41).

9. Claims 2 and 10 - 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hidaka et al. (WO 00/29214) as applied to claim 1 above, further in view of Susukida et al. (WO 00/34829, wherein the citations are from the English equivalent, US Patent 6,475,693 *).

With regard to claims 1 and 2, Hidaka et al. disclose the a composition comprising a phenolic alkali soluble resin, a photo-thermal conversion material, a solubility-suppressing agent/dissolution inhibitor and a melamine-formaldehyde resin as applied to claim 1 (see paragraph 5 of the Office Action). Hidaka et al. teach a variety of solubility-suppressing agents (page 32, line 15 – page 33, line 9) but fail to include the solubility-suppressing agent/dissolution inhibitor represented by formula (1) of the instant application.

Art Unit: 1709

Susukida et al. disclose a radiation-sensitive resin composition containing a radiation-sensitive novolak resin and a dissolution inhibitor (column 2, lines 22- 32). In a specific example, Susukida et al. further disclose a positive-working composition comprising novolak resin C and a dissolution inhibitor represented by the formula (IV):



(IV) (column 9, lines 20-40).

The positive-working radiation-sensitive composition shows high resolution and forms a pattern with good shape and a high aspect ratio, forms no scum and shows excellent micro-grooving properties (column 10, lines 60-64 and column 11, lines 1-2).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to use the dissolution inhibitor of Susukida et al. in the composition of Hidaka et al., in order to obtain a composition showing high resolution and in order to form patterns with good shape and high aspect ratio, forms no scum and shows excellent micro-grooving properties (Susukida et al, column 10, lines 60-64 and column 11, lines 1-2).

With regard to claims 10 - 12, Hidaka et al. disclose a method of producing a photosensitive lithographic printing plate comprising the following steps:

- coating on an aluminum plate a composition comprising m-cresol/p-cresol/phenol novolak resin, a photo-thermal conversion material, a solubility-

Art Unit: 1709

suppressing agent and Cymel 300 melamine-formaldehyde resin, to obtain a photosensitive lithographic printing plate (page 59, lines 7-10);

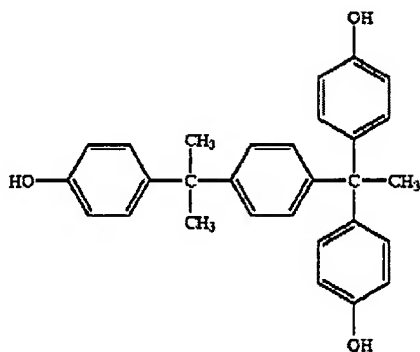
- exposing by a semiconductor laser plotter at 830 nm (page 61, lines 11-14);
- developing with an alkali developer for positive lithographic plates (page 61, lines 14-15).

10. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parsons (US Patent 6,280,899) in view of Hidaka et al. (WO 00/29214) as applied to claim 1 and in further view of Susukida (WO 00/34829, wherein the citations are from the English equivalent, US Patent 6,475,693 *).

With regard to claims 1 and 2, Parsons modified by Hidaka teach a composition for lithographic printing plates comprising an aqueous developer soluble polymer, such as a phenolic resin, a compound that reduces the aqueous developer solubility of the polymer (reversible insolubiliser), an infrared absorber and crosslinking compounds such as a melamine-formaldehyde resin, as applied to claim 1 (see paragraph 8 of the Office Action). Parsons et al. teach a variety of reversible insolubiliser compounds (column 6, line 14- column 7, line 10) but fail to include the reversible insolubiliser /dissolution inhibitor represented by formula (1) of the instant application.

Susukida et al. disclose a radiation-sensitive resin composition containing a radiation-sensitive novolak resin and a dissolution inhibitor (column 2, lines 22- 32). In a specific example, Susukida et al. further disclose a positive-working composition comprising novolak resin C and a dissolution inhibitor represented by the formula (IV):

Art Unit: 1709

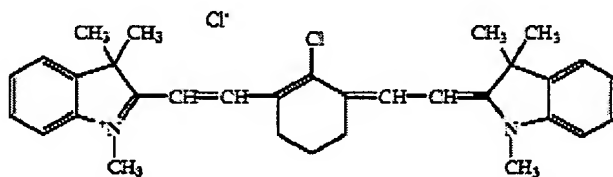


(IV) (column 9, lines 20-40).

The positive-working radiation-sensitive composition shows high resolution and forms a pattern with good shape and a high aspect ratio, forms no scum and shows excellent micro-grooving properties (column 10, lines 60-64 and column 11, lines 1-2).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to use the dissolution inhibitor of Susukida et al. in the composition of modified Parsons, in order to obtain a composition showing high resolution and in order to form patterns with good shape and high aspect ratio, forms no scum and shows excellent micro-grooving properties (Susukida et al, column 10, lines 60-64 and column 11, lines 1-2).

With regard to claim 8, Parsons et al. further disclose that the infrared absorbing material is a compound having the formula (III):



(III) (column 9, line 55).

Art Unit: 1709

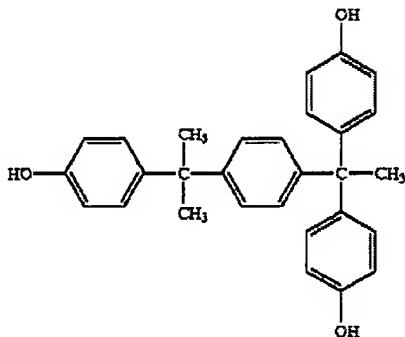
The compound of formula (III) is equivalent to the compound in formula (2) of the instant application, when R^1 , R^2 , R^4 , R^5 are hydrogen atoms, R^3 and R^6 are $-CH_3$ groups and X^- is a halogen atom, specifically Cl^- .

11. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuruya (JP 2002-189294) as applied to claim 1 above in view of Susukida (WO 00/34829, wherein the citations are from the English equivalent, US Patent 6,475,693 *).

With regard to claims 1 and 2, Tsuruya discloses a positive image forming composition comprising a photothermal converting material and an alkali-soluble resin which contains a novolak resin and/or phenolic resin, a dissolution retardant and a melamine-formaldehyde resin as applied to claim 1 (see paragraph 6 of the Office Action). Tsuruya discloses different classes of compounds acting as dissolution retardants/dissolution inhibitor but fails to include the dissolution retardant /dissolution inhibitor represented by formula (1) of the instant application.

Susukida et al. disclose a radiation-sensitive resin composition containing a radiation-sensitive novolak resin and a dissolution inhibitor (column 2, lines 22- 32). In a specific example, Susukida et al. further disclose a positive-working composition comprising novolak resin C and a dissolution inhibitor having represented by the formula (IV):

Art Unit: 1709

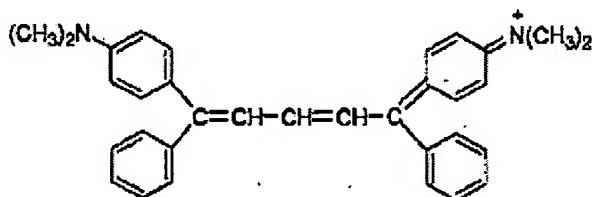


(IV) (column 9, lines 20-40).

The positive-working radiation-sensitive composition shows high resolution and forms a pattern with good shape and a high aspect ratio, forms no scum and shows excellent micro-grooving properties (column 10, lines 60-64 and column 11, lines 1-2).

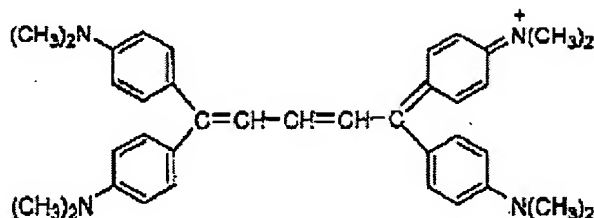
Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to use the dissolution inhibitor of Susukida et al. in the composition of Tsuruya, in order to obtain a composition showing high resolution and in order to form patterns with good shape and high aspect ratio, forms no scum and shows excellent micro-grooving properties (Susukida et al, column 10, lines 60-64 and column 11, lines 1-2).

With regard to claim 9, Tsuruya et al. further disclose that the photothermal converting material ("light-to-heat conversion material") is represented by formulas (I) and (II):



(I)

Art Unit: 1709



(II)

(compounds III-1 and III-3 in par.0036), with an anion X^- portion being p-toluene sulfonic acid ($p\text{-CH}_3\text{-C}_6\text{H}_4\text{SO}_3^-$) (par.0028).

The compound of formula (I) is equivalent to the compounds of formula (3) of the instant application, where R^7 and R^9 are $\text{N}(\text{CH}_3)_2$ groups, R^8 and R^{10} are hydrogen atoms and Y^- is $p\text{-CH}_3\text{-C}_6\text{H}_4\text{SO}_3^-$.

The compound of formula (II) is equivalent to the compounds of formula (3) of the instant application, where R^7 , R^8 , R^9 , R^{10} are all $\text{N}(\text{CH}_3)_2$ groups and Y^- is $p\text{-CH}_3\text{-C}_6\text{H}_4\text{SO}_3^-$.

* translation of WO 00/34829 is underway.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anca Eoff whose telephone number is 571-272-9810. The examiner can normally be reached on Monday-Friday, 6:30 AM-4:00 PM, EST.

Art Unit: 1709

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AE
AE

Barbara Gilliam
BARBARA GILLIAM
PRIMARY EXAMINER